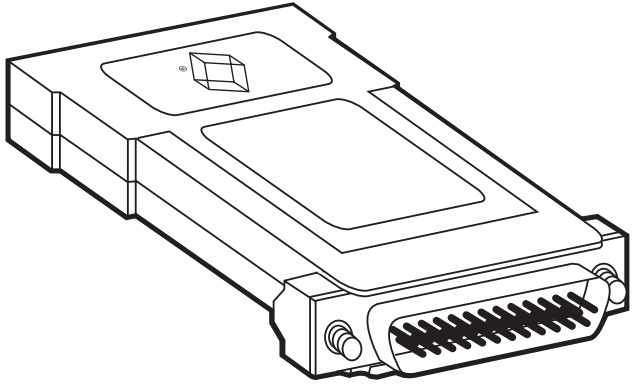
BLACK BOX®
NETWORK SERVICES

APRIL 2000
ME737A-F
ME737A-M

Sync SHM-NPR MP/ 5-Screw Terminal Block



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

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1. Specifications

Maximum Distance—8.5 mi. (13.6 km)

Operation—4-wire half- or full-duplex

Protocol—Synchronous

Speed—1200, 2400, 4800, 9600, 19,200 bps

Transmit Timing—Internal or external clock

Transmission Level—6 dBm

Table 1-1. Transmission Controls

Transmission Controls	SHM-NPR Status
RTS/CTS delay (Circuits 105/106)	20 millisecs
DSR (Circuit 107)	Constantly ON
DCD (Circuit 109)	Constantly ON
DCD (Circuit 109), Multipoint	Carrier controlled

Terminal Interface—RS-232 (DCE)

Telephone Line Interface—5-screw (4-wire and ground) connector block with cable strain relief inside plastic cover

Connectors—(1) DB25 male or female, (1) 5-screw terminal block

Temperature Tolerance—32 to 140°F (0 to 60°C)

Maximum Altitude—Up to 10,000 ft. (3048 m)

Humidity—Up to 95%, noncondensing

Power—Uses ultra-low power from the RS-232 data and control signals (Pin 4 or 20 [6 VDC]); AC/DC overvoltage protection circuits connected via isolation transformers rated at 1500 VRMS

Size—0.9"H x 2.1"W x 4.3"D (2.3 x 5.3 x 10.9 cm)

Weight—3.3 oz. (93.6 g)

2. Introduction

2.1 Description

The Sync SHM-NPR MP/5-Screw Terminal Block uses ultra-low power from the standard EIA RS-232-C/CCITT V.24 data and control signals.

The SHM-NPR will operate even if only Transmit Data (Circuit 105) is connected (without the terminal sending Request to Send [Circuit 105] or Data Terminal Ready [Circuit 108.2] signals). Both positive and negative signals are generated in compliance with EIA RS-232-C/CCITT V.24 standards regardless of constantly high or constantly low Transmit Data (Circuit 103). An internal or external clock provides transmit timing.

The low transmit level of -6 dBm minimizes crosstalk onto adjacent circuits within the same cable. The SHM-NPR uses differential diphase modulation to provide immunity to background noise, eliminate line distortion, and permit efficient transmission and reception of serial data. Data is transmitted and received at a balanced impedance, ensuring excellent immunity to circuit noise. Additionally, the SHM-NPR is coupled to the telephone line through isolation transformers

which, in conjunction with electronic circuitry, protect against AC or DC overvoltages. The transformers are rated at over 1,500 V RMS, so the SHM-NPR is suitable for connection to local circuits provided by most national telephone administrations (PTTs).

2.2 Features

- Compact and lightweight.
- Easy to install.
- Synchronous transmission from 1.2 to 19.2 kbps.
- Simple strap settings.
- No AC power required.
- Transformer isolated.
- Enclosed line termination unit.
- Strain relief for line cable.
- Internal or external clocking.
- Full- or half-duplex, point-to-point or multipoint.

- Plugs directly into RS-232C/V.24 terminal connector.
- Transmission range up to 11 miles (17.7 km).

2.3 Applications

The Sync SHM-NPR is used for local data distribution, connecting full-duplex synchronous terminals to computers. Stretching beyond the usual limit of 50 ft. (15.2 m), a pair of Sync SHM-NPRs will ensure integrity of data transmission using unconditioned 4-wire telephone lines for distances up to 11 miles (17.7 km), depending on gauge and data rates (see **Table 1-1**). Since they're compact and require no AC power, the SHM-NPRs are ideal for economical data distribution within large industrial sites, office complexes, and campus environments.

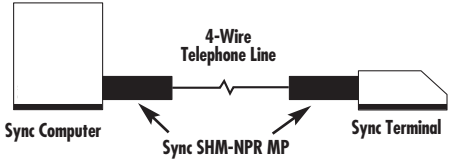

Figure 2-1. Typical Application.

3. Installation

Follow the steps listed below to install the Sync SHM-NPR MP.

1. Open the modem cover by removing the four screws that fasten the two halves of the cover together

2. Connect the four-wire telephone line to the screw terminal block, transmit pair to XMT and receive pair to RCV. A ground is provided where needed to connect the cable shield.

3. Review **Table 3-1** since the modem may already be factory-strapped to suit your application.

4. Strap the modem according to **Table 3-1** for data rate, internal or external clock, and carrier "on" or "controlled." Refer to **Figure 3-1** for strap location.

Table 3-1. Strap Selection

Strap Identity	Function	Possible Positions	Normal Factory Setting
Rate	Selects data transmit rate	1200 bps 2400 bps 4800 bps 9600 bps 19200 bps	9,600 bps
Clock	Selects timing source	External Internal	External
Carrier	Selects point-to-point (ON) or multipoint (CONTROL)	ON Control	Control

5. Close the unit and fasten the four screws.

6. Connect the modem directly to the 25-pin connector of the terminal or computer port, and fasten with the two screws (one on each side of the modem connector).

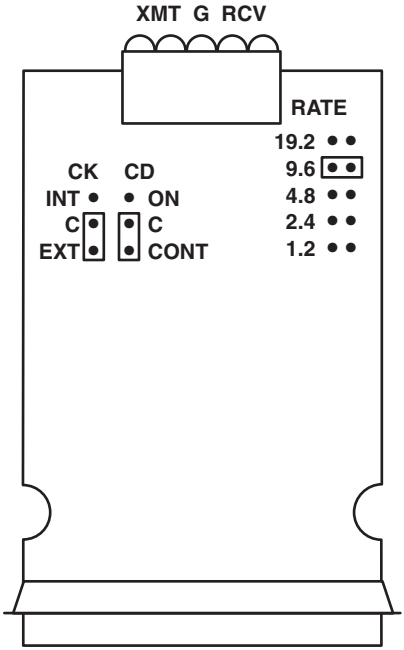

Figure 3-1. Location of Straps.

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